

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

**TA7331P, TA7331F****LOW QUIESCENT CURRENT AUDIO POWER AMPLIFIER  
FOR MINI / MICRO CASSETTE TAPE RECORDER**

The TA7331P and TA7331F are an audio power amplifier designed for use in low voltage consumer applications.

Especially it is suitable for mini / micro cassette tape recorder and pocket radio applications.

As the quiescent current is only 3mA at 3V, it is best for battery operation.

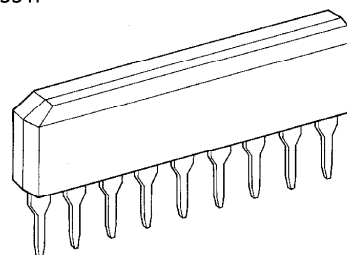
**FEATURES**

- Operating supply voltage range  
:  $V_{CC}(\text{opr}) = 2 \sim 5\text{V} \cdots \text{TA7331P}$  ( $T_a = 25^\circ\text{C}$ )  
:  $V_{CC}(\text{opr}) = 2 \sim 4\text{V} \cdots \text{TA7331F}$  ( $T_a = 25^\circ\text{C}$ )
- Low quiescent current :  $I_{CCQ} = 3\text{mA}$  (Typ.)  
( $V_{CC} = 3\text{V}$ ,  $T_a = 25^\circ\text{C}$ )
- OTL audio power amplifier
- TA7331F (SO) is standard model of flat package

**OUTPUT POWER TABLE** ( $f = 1\text{kHz}$ ,  $\text{THD} = 10\%$ ,  $T_a = 25^\circ\text{C}$ )

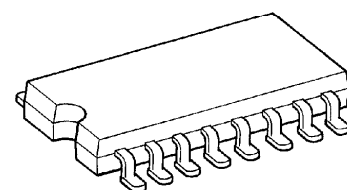
PACKAGE		TA7331P	TA7331F
$V_{CC} = 3\text{V}$	$R_L = 8\Omega$	120mW	120mW
	$R_L = 4\Omega$	200mW	200mW
	$R_L = 8\Omega$ BTL	400mW	400mW
$V_{CC} = 4.5\text{V}$	$R_L = 8\Omega$	300mW	Cannot use
	$R_L = 4\Omega$	500mW	

TA7331P



SIP9-P-2.54A

TA7331F (SO)



SSOP16-P-225-1.00

**Weight**

SIP9-P-2.54A : 0.92g (Typ.)  
SSOP16-P-225-1.00 : 0.14g (Typ.)

961001EBA2

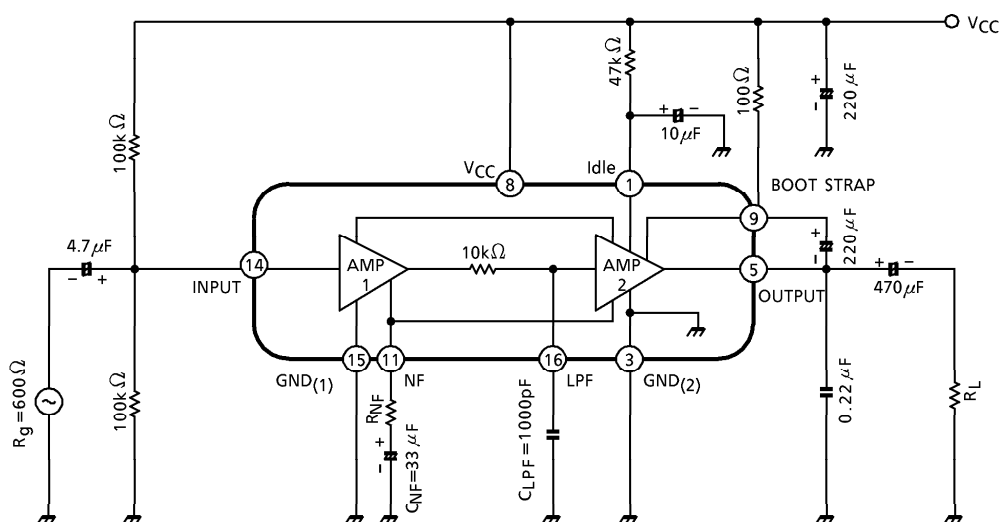
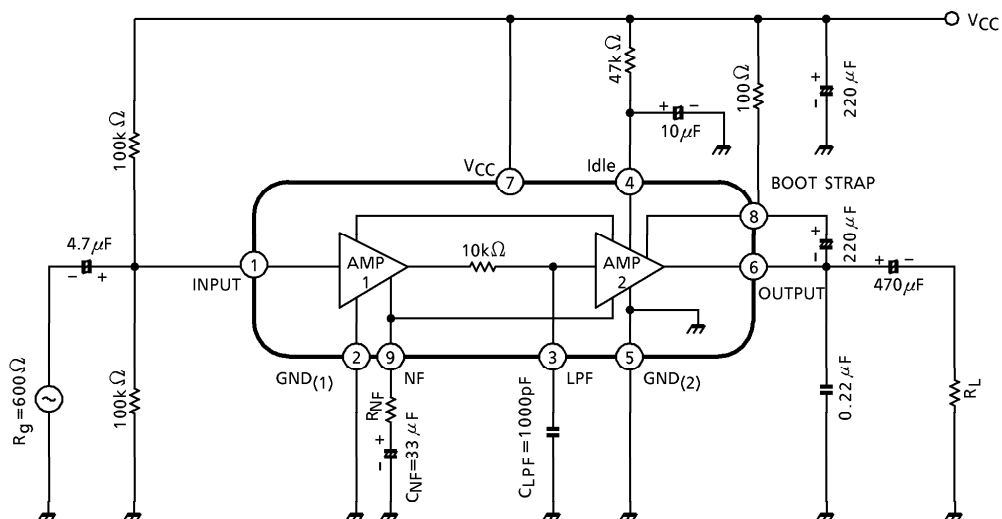
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● The information contained herein is subject to change without notice.

TA7331P



## MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V <sub>CC</sub>	8	V
Operating Supply Voltage	TA7331P	V <sub>CC</sub>	5	V
	TA7331F		4	
Power Dissipation	TA7331P	P <sub>D</sub> (Note)	700	mW
	TA7331F		350	
Operating Temperature		T <sub>opr</sub>	– 10~60	°C
Storage Temperature		T <sub>stg</sub>	– 55~150	°C

(Note) Derated above 25°C in the proportion of 5.6mW/°C for TA7331P and 2.8mW/°C for the TA7331F.

## ELECTRICAL CHARACTERISTICS

## TA7331P

Unless otherwise specified, V<sub>CC</sub> = 3V, f = 1kHz, R<sub>L</sub> = 4Ω, Ta = 25°C

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I <sub>CCQ</sub> (1)	—		—	3	5	mA
	I <sub>CCQ</sub> (2)	—	V <sub>CC</sub> = 4.5V	—	5	6.5	
Voltage Gain	G <sub>V</sub> (1)	—	R <sub>NF</sub> = 0Ω, C <sub>NF</sub> = 33μF	47	50	53	dB
	G <sub>V</sub> (2)	—	R <sub>NF</sub> = 82Ω, C <sub>NF</sub> = 33μF	—	40	—	
Output Power	P <sub>O</sub> (1)	—	THD = 10%	170	200	—	mW
	P <sub>O</sub> (2)	—	R <sub>L</sub> = 8Ω, THD = 10%, V <sub>CC</sub> = 4.5V	—	300	—	
Total Harmonic Distortion	THD (1)	—	P <sub>O</sub> = 100mW, R <sub>NF</sub> = 0Ω	—	1.0	5	%
	THD (2)	—	P <sub>O</sub> = 50mW, R <sub>NF</sub> = 0Ω, R <sub>L</sub> = 8Ω	—	0.8	—	
Output Noise Voltage	V <sub>no</sub>	—	R <sub>g</sub> = 1kΩ, BPF ≒ 50Hz~20kHz	—	0.2	0.4	mV <sub>rms</sub>

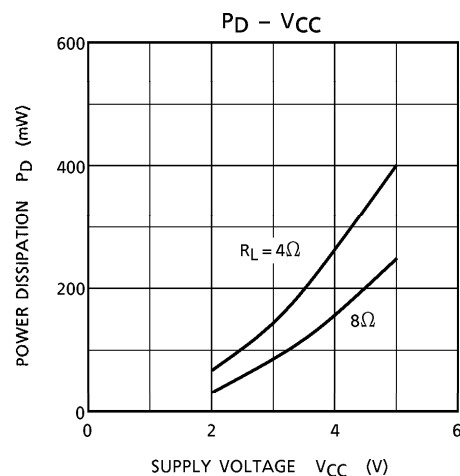
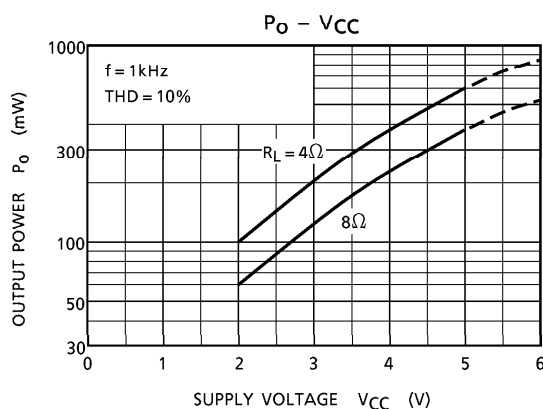
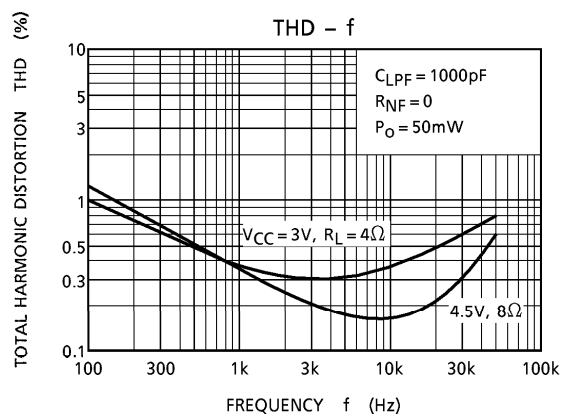
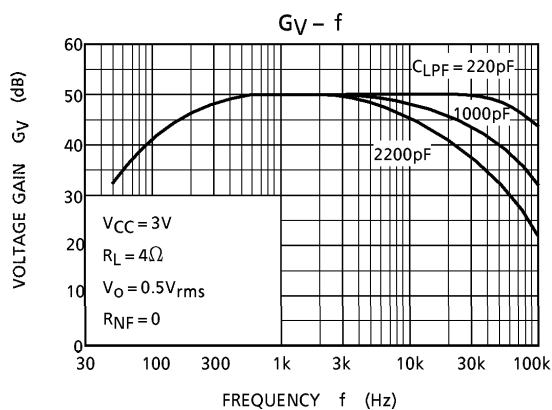
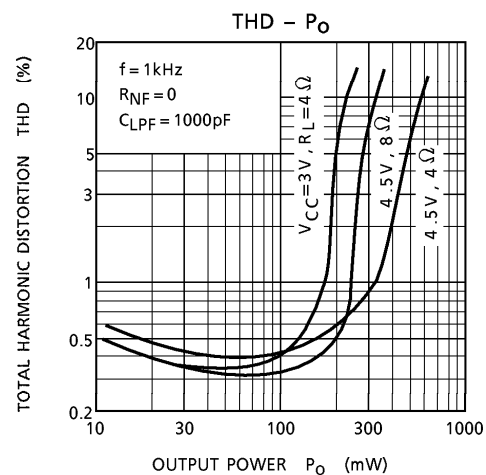
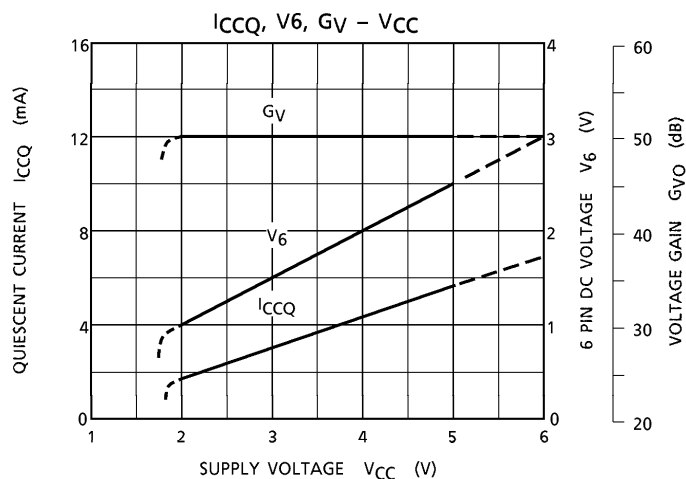
## TA7331F

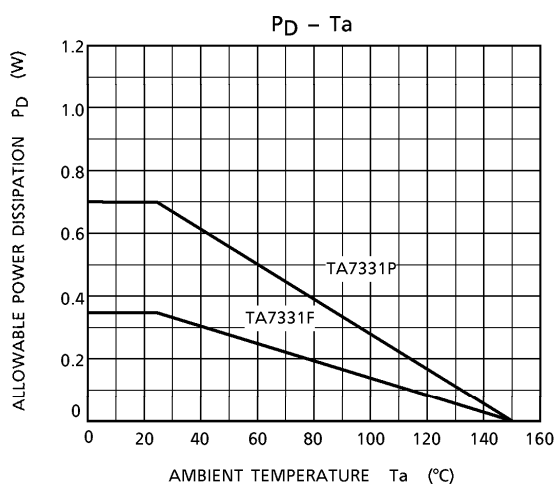
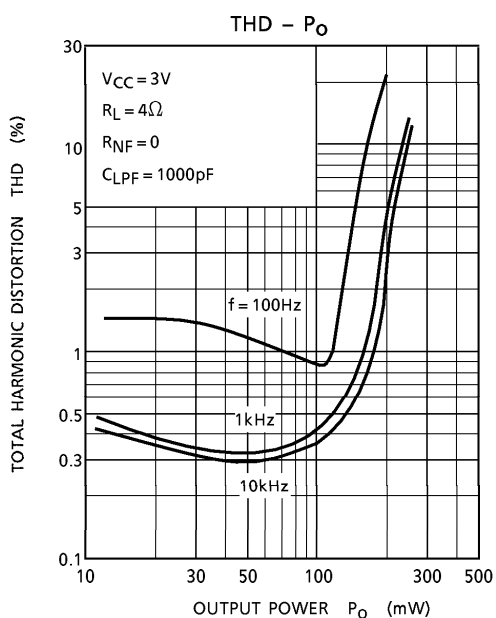
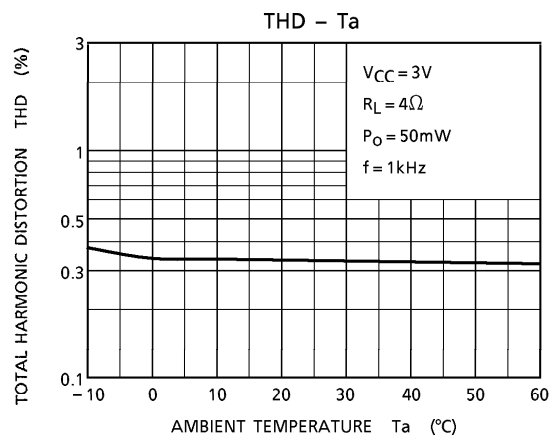
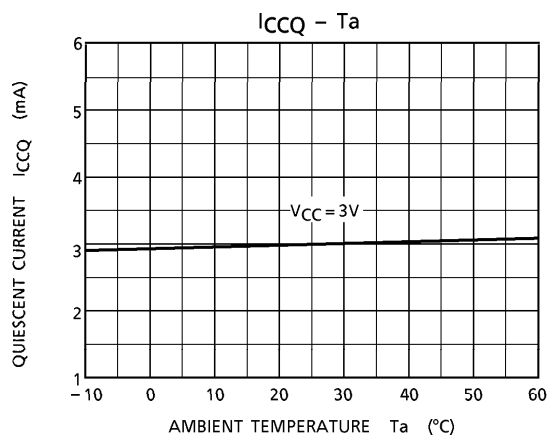
Unless otherwise specified, V<sub>CC</sub> = 3V, f = 1kHz, R<sub>L</sub> = 4Ω, Ta = 25°C

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I <sub>CCQ</sub> (1)	—		—	3	5	mA
Voltage Gain	G <sub>V</sub> (1)	—	R <sub>NF</sub> = 0Ω, C <sub>NF</sub> = 33μF	47	50	53	dB
	G <sub>V</sub> (2)	—	R <sub>NF</sub> = 82Ω, C <sub>NF</sub> = 33μF	—	40	—	
Output Power	P <sub>O</sub> (1)	—	THD = 10%	170	200	—	mW
Total Harmonic Distortion	THD (1)	—	P <sub>O</sub> = 100mW, R <sub>NF</sub> = 0Ω	—	1.0	5	%
	THD (2)	—	P <sub>O</sub> = 50mW, R <sub>NF</sub> = 0Ω, R <sub>L</sub> = 8Ω	—	0.8	—	
Output Noise Voltage	V <sub>no</sub>	—	R <sub>g</sub> = 1kΩ, BPF ≒ 50Hz~20kHz	—	0.2	0.4	mV <sub>rms</sub>

## CHARACTERISTIC CURVES

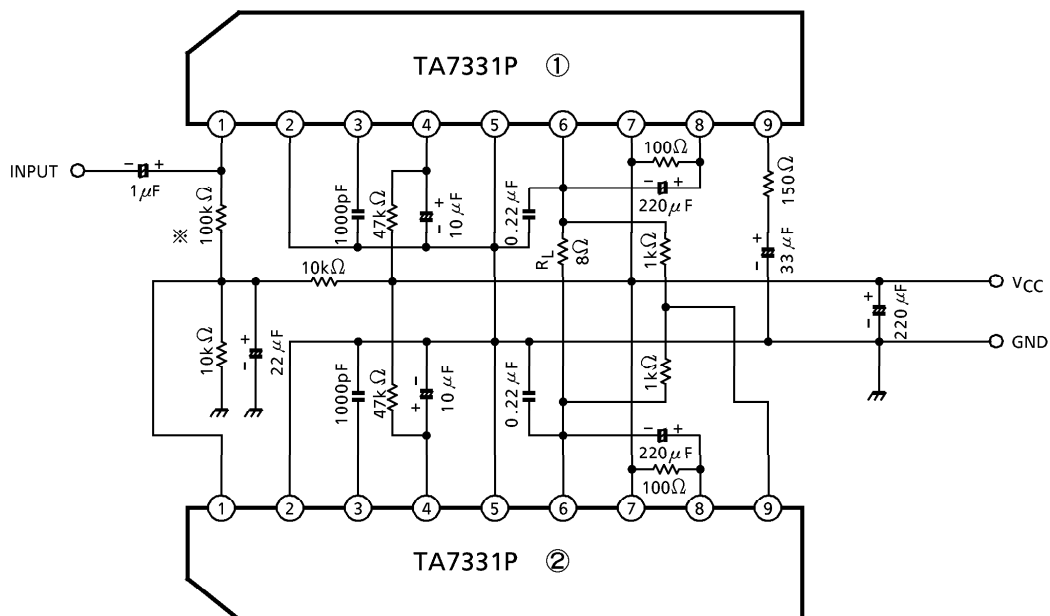
(Note) Data above  $V_{CC} = 4V$  is only TA7331P.





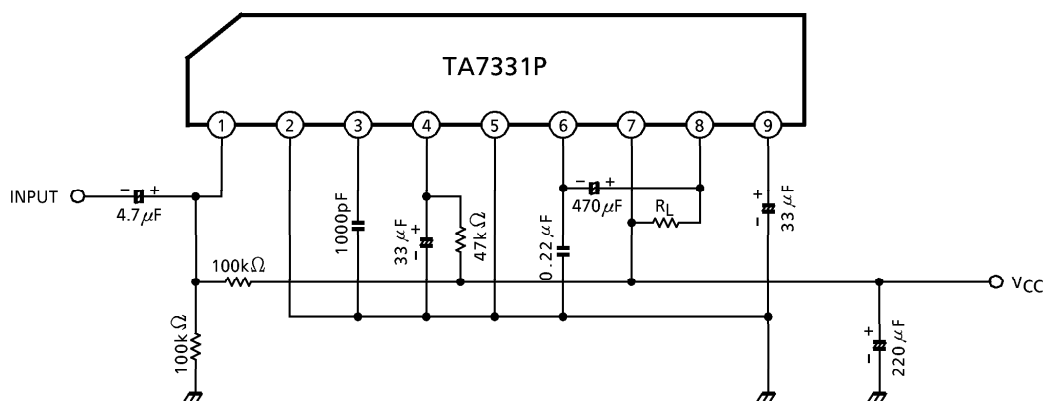
TA7331P

**APPLICATION 1 (BTL CONNECTION)**

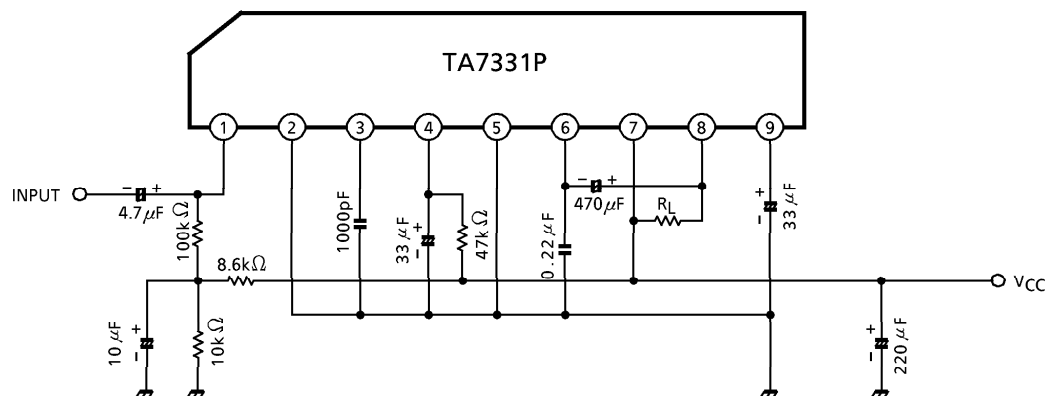


※ It is necessary to adjust to  $I_{CCQ}$ .

**APPLICATION 2 (FEW EXTERNAL PARTS)**

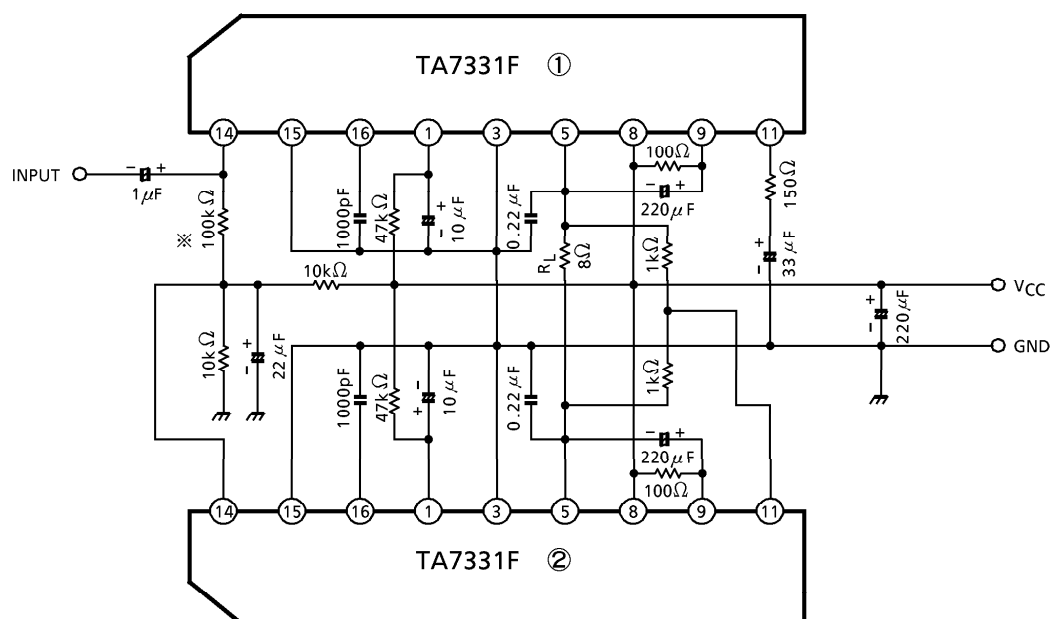


**APPLICATION 3**



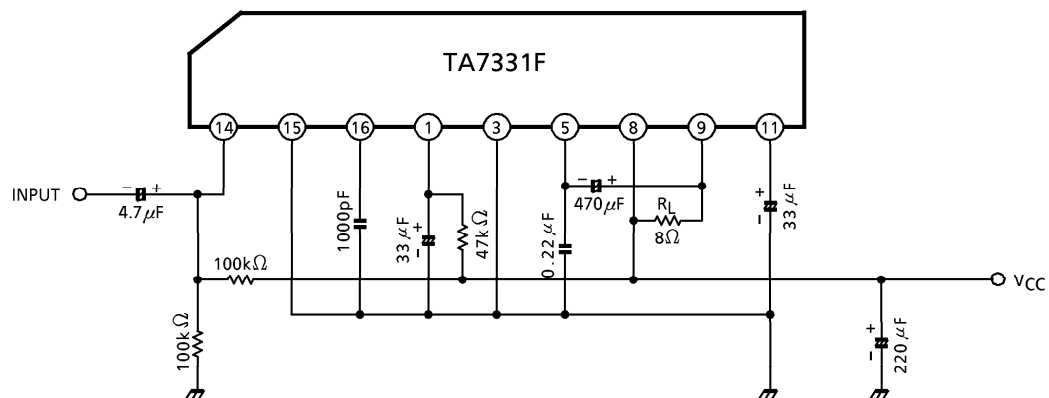
TA7331F

**APPLICATION 1 (BTL CONNECTION)**

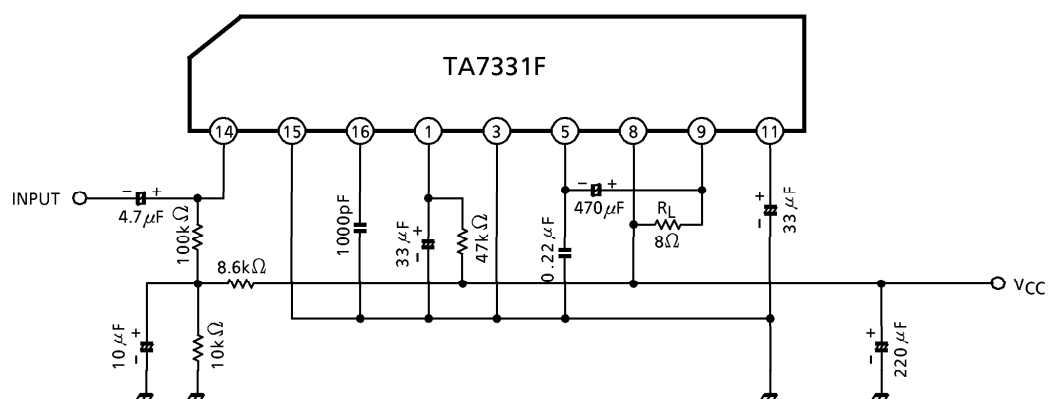


※ It is necessary to adjust to  $I_{CCQ}$ .

**APPLICATION 2 (FEW EXTERNAL PARTS)**



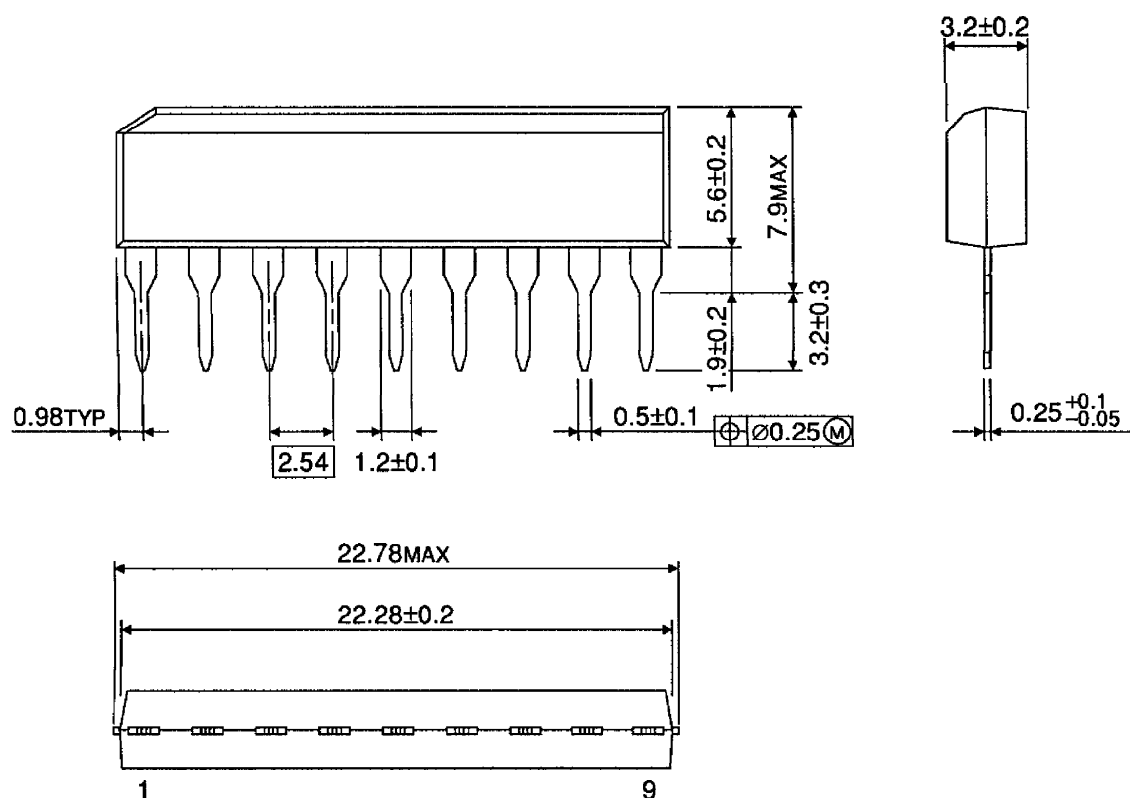
**APPLICATION 3**





## OUTLINE DRAWING SIP9-P-2.54A

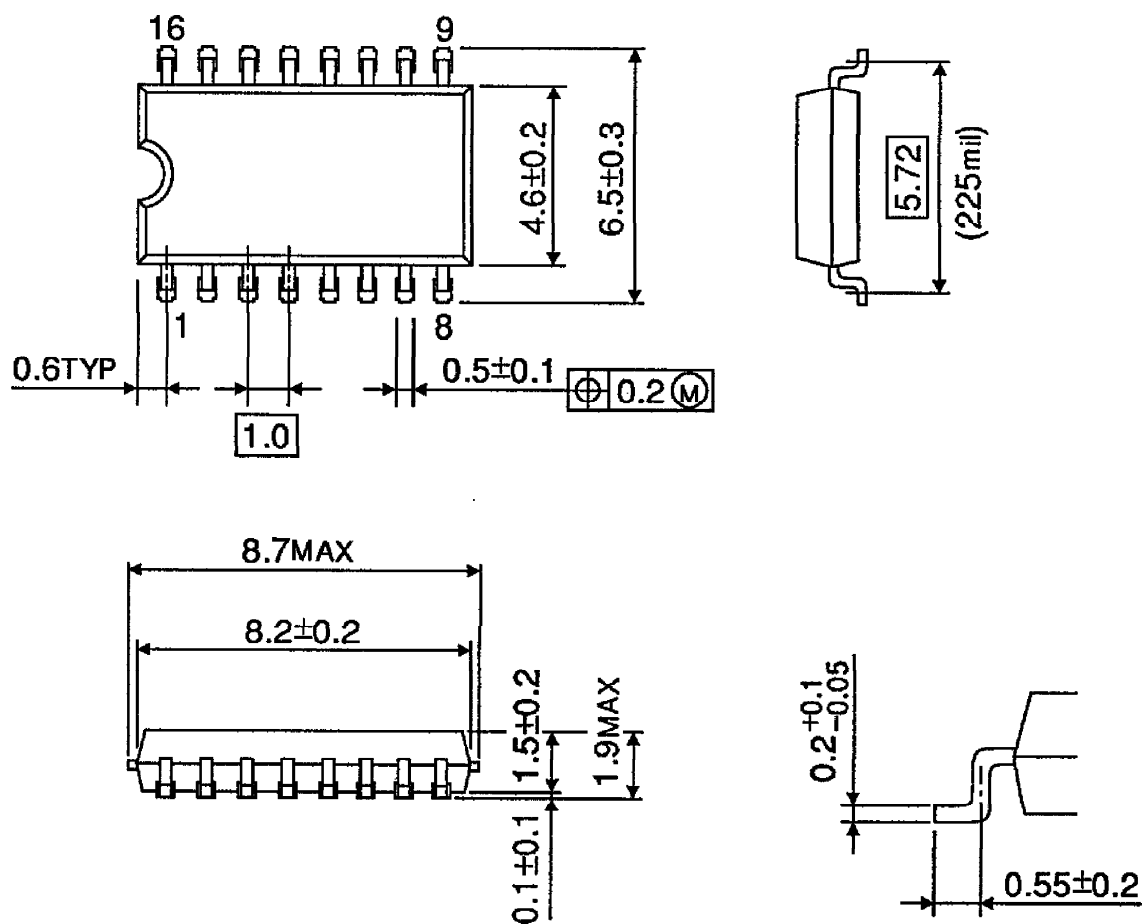
Unit : mm



Weight : 0.92g (Typ.)

**OUTLINE DRAWING**  
SSOP16-P-225-1.00

Unit : mm



Weight : 0.14g (Typ.)